## This Page Is Inserted by IFW Operations and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

## IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents will not correct images, please do not report the images to the Problem Image Mailbox.



## PATENT ABSTRACTS OF JAPAN

(11) Publication number: 01012180 A

(43) Date of publication of application: 17 , 01 , 89

(51) Int. Cl

F16K 11/04 F02M 51/00

(21) Application number: 62166004

(22) Date of filing: 02 . 97 . 87

(71) Applicant:

NIPPON DENSO CO LTD

(72) inventor:

IWANAGA TAKASHI SHIMIZU HIROSHI MIYAKI MASAHIKO OMORI TOSHIHIKO

(54) THREE-WAY SOLENOID VALVE

(57) Abstract:

PURPOSE: To prevent the leak to a discharge port from a feeding port when a valve is switched, by continuously installing a cylindrical part at the top edge of an outer valve for opening and closing the part between a taking-out port and the discharge port and forming a throttle by inserting said cylinder part into the taking-out port.

CONSTITUTION: A feeding port 31, taking-out port 32, and a discharge port 33 are formed onto a valve body 30. A passage 44 is formed in an outer valve 41 which contacts and separates from the first valve seat 39, and an inner valve 50 is arranged oppositely to the second valve seat 48 on the midway. A cylindrical part 61 is continuously installed at the top edge of the outer valve 41, and a throttle 63 is formed between the passage 34 of the taking-out port 32. When a solenoid 54 is in nonconduction state, the outer valve 41 is lowered by a spring 55, and the communication between the feeding port 31 and the taking-out port 32 is permitted. When the solenoid 54 conducts, the taking-out port 32 and the discharge port 33 communicates, and the leak to the discharge port 33 from the feeding port 31 is

preventes BY THRONE 63

prevented by the throttle 63.

